Santee Cooper

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Mr. Joe Eller
Bureau of Air Quality
South Carolina Department of
Health and Environmental Control
2600 Bull Street
Columbia, SC 29201

RE: Santee Cooper Response to U.S. EPA Comments on the Pee Dee Generating Station Construction Permit Application

Dear Mr. Eller:

Attached please find Santee Cooper's responses to US EPA's comments on Santee Cooper's Pee Dee Generating Station Prevention of Significant Deterioration Construction Permit Application. The U.S. EPA's comments are repeated with Santee Cooper's responses in bold face print following the comment.

1. Plantwide Applicability Limitations

The requested PALs would be allowables PALs for a greenfield facility. Such PALs are outside the explicit scope of current SCDHEC regulations. Although we have assisted in the development of PALs that comprise a mix of existing and new units at an existing facility, we do not have experience with PALs for greenfield projects. Further discussion is needed on this concept.

Santee Cooper concurs that further discussion is needed on the proposed PAL approach. However, we offer the following observations at this time on DHEC's inherent authority to issue allowable PALs for new greenfield facilities under South Carolina regulations. First, the PAL permit that DHEC issued to the BMW manufacturing facility in Spartanburg, South Carolina was based on allowable emissions levels established for the entire facility. The main reason that this occurred was that BMW sought to obtain a PAL permit for the entire facility at the same time that it sought authority to undertake a major plant expansion. The BMW plant expansion was intended to increase the vehicle production rate from 219,000 to 468,000 vehicles per year. The plant expansion also entailed the construction of an entirely new production line and ancillary equipment that included body shop, paint shop, assembly shop, tank farm, energy center, and plastic parts shop. At the same time that a construction permit was issued for the

new production line, DHEC reviewed existing equipment and operations at the BMW facility and set new allowable emissions levels for those existing emissions activities under the PSD / NSR permitting process. The PAL levels set for the entire BMW facility were thus set based on allowable emissions levels that were permitted for both the new and existing portions of the BMW facility. This means that no practical difference would seem to exist between the PAL issued for BMW plant expansion and a PAL for the new Pee Dee facility. Both would be based on allowable emissions for entire facility. Our second observation is provided in response to the above EPA statement that an allowable PAL for a greenfield facility may be "outside the explicit scope of current SCDHEC regulations." This statement appears to be based on the fact that the current SCDHEC regulations (as well as the corresponding federal regulations) contain an express authorization for only actual PALs and not allowable PALs. This gap in the NSR regulations, however, does not imply that DHEC lacks regulatory authority to issue allowable PALs for greenfield facilities. Both EPA and DHEC have historically interpreted existing NSR netting regulations to provide general authority to issue PAL permits. Furthermore, as evidenced in the BMW permit, DHEC has interpreted South Carolina general NSR netting regulations to authorize the issuance of a PAL permit based on the allowable emissions levels set for the facility. Although neither EPA nor DHEC has yet codified the provisions for establishing an allowable PAL into the NSR regulations, DHEC clearly has general authority under existing State netting regulations to issue an allowable PAL for the new Pee Dee generating facility.

2. Particulate Matter (Main Boilers)

   a. Does SCDHEC intend to issue a PM filterables only limit as well as a limit that includes condensables? We recommend that a filterables limit be included for consistency with the applicable NSPS.

      Santee Cooper concurs that PM-filterable limits for NSPS Subpart Da and DHEC Regulation 61-62.5 Standard 1 should be included, since these two standards only regulate PM-filterable emissions. For BACT, only a PM-total limit should be set, since BACT only regulates PM-total and not the individual filterable and condensable portions.

   b. When will Santee Cooper decide whether to use ESP or FF for PM emissions control?

      Santee Cooper has not yet made a final decision on the technology for controlling PM emissions. The selection of PM control technology will depend upon vendor bids that Santee Cooper receives and a number of other factors that may affect the final design of the Pee Dee power plant.

c. When will Santee Cooper decide whether to use a PM CEMS for NSPS purposes?

The NSPS gives an affected source the option to use PM CEMS as an alternative to the reference method test established for demonstrating compliance with the PM standards. Santee Cooper recently installed and is at the early stages of operating PM CEMS at two coal-fired units within Santee Cooper's system. Before making a final determination of whether to employ PM CEMS or not for the Pee Dee units, Santee Cooper plans to carefully review the operational results from these two PM CEMS installations to determine technological feasibility and assess their effectiveness for those units.

d. We appreciate Santee Cooper's acknowledgement that $PM_{2.5}$ is a regulated NSR pollutant, and we concur with the PM_{10} surrogate approach used to address $PM_{2.5}$ emissions. However, since EPA is expected to issue specific $PM_{2.5}$ implementation rules within the next several months and well before construction on the Pee Dee project is completed (if the project is approved), SCDHEC may wish to provide for a limited permit re-opener after EPA's rules are issued.

EPA's current policy is to treat PM_{10} as a surrogate for purposes of regulating $PM_{2.5}$ in the NSR Program. The EPA policy applies to both the air quality and technology review components of the NSR program. This means that DHEC is currently authorized to rely on PM_{10} modeling to implement the NSR air quality protections for the $PM_{2.5}$ standard and set BACT / LAER emissions limitation for PM_{10}, instead of $PM_{2.5}$. Santee Cooper believes the best course of action is to adhere to EPA's current policy of using PM_{10} as a surrogate for NSR regulation of $PM_{2.5}$. At this time, it is still unclear whether EPA will discontinue the current PM_{10} surrogate policy in the near term and, if so, how any new EPA policy for regulating $PM_{2.5}$ under the NSR program will apply to newly permitted units, such as the Pee Dee facility. If a change in the EPA policy requires the re-opening of the NSR permit for the Pee Dee facility at some point in the future, the re-opening of the permit should be limited in scope. Santee Cooper, for example, should not be required to perform additional air quality modeling with respect to the $PM_{2.5}$ standard unless DHEC can show that emissions from the Pee Dee facility will result in a violation of the $PM_{2.5}$ standard. (At this time, Florence County is attaining the current $PM_{2.5}$ standards (see 40 C.F.R. § 81.341) and is projected to meet the recently revised $PM_{2.5}$ standards that take legal effect by the end of this year.) Furthermore, any effort to revise PM BACT limits must also be limited in scope. If, for example, future EPA rules or guidance require the re-opening of the NSR permit to establish new $PM_{2.5}$ limits for the Pee Dee facility, those new $PM_{2.5}$ limits would need to be equivalent to the BACT limits established for PM_{10}. To put in other words, any future BACT limits set for $PM_{2.5}$ must be consistent with the

PM_{10} BACT determination issued for the Pee Dee facility. DHEC, for example, cannot impose an entirely new $PM_{2.5}$ BACT standard that would require a replacement or major upgrade the PM control technology installed at the Pee Dee units for meeting PM_{10} BACT standard.

3. Sulfur Dioxide (Main Boilers)

a. What is the basis of the 97.5 percent SO_2 removal efficiency proposed for the main boilers? Why not 98 percent or even a higher efficiency? Although we agree that WFGD is representative of an acceptable control method, selection of a BACT emissions limit should be based on the highest removal efficiency achievable by such method taking into account economic, environmental, and energy factors.

BACT is a case-specific determination that results in the selection of an emission limit representing the application of control technology or control methods for a particular facility. Both the statute and South Carolina regulations require that the BACT limit take into account "energy, environmental, and economic impacts and other costs."[1] In the case of the Pee Dee PSD permit application, Santee Cooper followed the five-step, top-down BACT analysis recommended by EPA and is proposing a 0.15 lb/MMBTU emission limit for SO_2 averaged over a 30-day period. This limit is based on a 97.5% SO_2 removal efficiency burning eastern bituminous coals for which sufficient supplies are available over the projected 60-year lifetime of the Pee Dee facility. Santee Cooper selected the 97.5% removal efficiency for the Pee Dee facility based on a careful review of the performance levels achieved by wet flue gas desulfurization (WFGD) systems as well as engineering analyses from the vendor and other technical sources. In addition, the 97.5% removal efficiency was selected as the control level that the Pee Dee facility can be expected to achieve consistently through a WFGD system under the full range of operating conditions.

The selected SO_2 removal efficiency also is consistent with removal levels that have been recently permitted for similar units burning eastern coals. These limits and the projects they are associated with are shown in Table 5-3 of Volume I of the Pee Dee permit application. The 98 percent removal efficiency referred to above was proposed in recent PSD permit applications for "merchant" type units. A number of the merchant units are only in the application phase and may not be constructed. Santee Cooper reviewed the limits for these units as well as those being built by investor owned utilities (IOUs) in addition to publicly owned electric utilities. After considering the various limits and alternatives as well as the energy, environmental and

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[1] *See* 42 U.S.C. § 7479(3);40 C.F.R. § 52.32(b)(12); South Carolina Regulation 61-62.5,Standard 7, paragraph (b)(8)..

economic impacts, Santee Cooper based the 97.5 percent removal efficiency target on these units.

b. An SO_2 BACT option not discussed in the permit application is the option of not burning any petroleum coke (petcoke). At worst, petcoke combustion can produce up to twice the amount of uncontrolled SO_2 on a lb/MMBtu basis as the coal proposed for use at the Pee Dee project.

The use of petcoke at the Pee Dee facility was not considered in determining the appropriate sulfur content levels of the design fuel for purposes of the SO_2 BACT analysis. Rather, Santee Cooper selected the design sulfur content levels based solely on coal supply availability. Specifically, Santee Cooper evaluated supplies of the eastern bituminous coal that are projected to be available over the 60-year lifetime of the Pee Dee facility. The proposal to burn petcoke at the Pee Dee facility thus had no affect in determining the sulfur content levels of the design fuel or setting the SO_2 BACT limits for the facility. Rather, the proposal to burn petcoke reflects Santee Cooper's objective to obtain fuel flexibility by obtaining authorization to burn limited quantities of petcoke. The Pee Dee units would thus burn petcoke only to the extent they can keep SO_2 levels below the SO_2 BACT limits. The issue of petcoke and the type of coal that will be burned at the Pee Dee project is further addressed in Santee Cooper's response to items nos. 3.e and 3.f below.

c. The proposed SO_2 BACT is 0.15 lb/MMBtu, equivalent to 855 lb/hr per boiler, on a 30-day basis. Santee Cooper has also proposed a daily cap of 1,254 lb/hr for both boilers combined, equivalent to 0.11 lb/MMBtu, on a 24-hour basis. If this cap can be met on a 24-hour basis, why should BACT be 0.15 lb/MMBtu on a 30-day basis?

Santee Cooper has proposed two SO_2 limits to be contained in the PSD construction permit. The 30-day lb/MMBtu rate is a technology-based performance standard that is intended to reflect "best available control technology" (BACT) for controlling SO_2 emissions from the Pee Dee power plant. The daily SO_2 emissions cap is an environmental limit that is intended to ensure the protection of air quality and other environmental values. It does so by placing an absolute limit on the total mass amount of the SO_2 that the Pee Dee facility may emit over a 24-hour period. Although related, each proposed SO_2 limit is fundamentally different and functionally distinct from the other. Santee Cooper is proposing the 30-day BACT limit of 0.15 lb/MMBtu based on the selection of WFGD as the best available SO_2 control technology and an evaluation of the SO_2 emissions levels that the selected technology can achieve under all foreseeable operating conditions with design coal. The BACT analysis in the permit application contains a detailed

analysis of the reasons for setting a technology-based BACT performance standard of 0.15 lb/MMBtu. In contrast, Santee Cooper is proposing a daily mass-based emissions cap to ensure the protection of the environment. A proposed daily cap of 1,254 lb/hr averaged over 24-hour period was set based on air quality modeling and is intended to ensure, among other things, no adverse impacts on visibility and Class I Increment at Cape Romain.

EPA is correct to note that the stringency of the proposed 30-day BACT limit does not strictly correlate to the stringency of the proposed daily mass limit when it is converted to the lb/MMBtu rate. This was by design and is due to the fundamental differences between the two SO_2 limits, as noted above. One notable consequence of these differences is that the Pee Dee facility will have greater flexibility in meeting the mass-based limit than in complying with the BACT lb/MMBtu rate. A mass-based SO_2 emissions cap, for example, provides compliance options other than technology – i.e., other than achieving sufficient SO_2 removal efficiencies by the WFGD system to meet the applicable lb/MMBtu rate limit for SO_2. One such alternative compliance option could be for Santee Cooper to reduce generation output and hence SO_2 emissions at the Pee Dee generating units when both units are burning design coal at maximum sulfur context levels. Another compliance option could be to manage the sulfur content of the coal being burned to appropriate levels based on various operating conditions, including unit outages, load levels, dispatch of the units, and removal efficiencies of the WFGD scrubber. A mass-based emissions limit allows for this type of operating flexibility since its objective is to protect the environment and not to set performance standards for control technology that must be met at all load levels and all foreseeable operating conditions. The proposed SO_2 BACT limit, in contrast, will function as such a performance standard for the WFGD system that will be installed on each Pee Dee unit. In other words, Santee Cooper will meet the 30-day BACT limit through proper operation of the WFGD control technology. To the extent that the daily mass limit is a more restrictive standard, Santee Cooper need not rely only on the removal efficiencies of the WFGD control technology in order to achieve compliance with this environmental limit. Rather, compliance with a mass-based limit could be achieved, in part, through self-imposed operating restrictions on the dispatch, operation, and fuel use at the Pee Dee units.

d. If this project reaches the draft permit phase, we recommend that SCDHEC impose SO_2 emissions limits that include the emissions rates and averaging times on which modeling was based.

As noted in the previous response, Santee Cooper has proposed two separate SO_2 emissions limits for inclusion in the PSD permit for the Pee Dee facility. The technology-based BACT limit is fundamentally different and distinct

from the environmental limit on total mass emissions. Santee Cooper agrees that the latter environmental limit should be based on the emissions levels and averaging times used in the modeling analyses. This, in fact, is exactly what Santee Cooper has proposed to do in its PSD permit application. Section 6 of the permit application sets forth mass-based emissions limit of 1,254 lbs/hour, averaged over a 24-hour period. The proposed emission rate and averaging time are the exact same that were used in the modeling analyses to assess potential air quality and Class I impacts from the maximum emissions of the Pee Dee plant. Santee Cooper further believes that the proposed BACT SO_2 limitation, expressed in terms of a lb/MMBtu rate, should not be adjusted or revised to reflect the rates and averaging times used in the air quality modeling analyses. The proposed BACT lb/MMBtu rate limit, as noted above, serves a separate and different function of setting the standards for control technology performance and SO_2 removal efficiency at the unit under full range of load and operating levels. However, the lb/MMBtu rate limit does not provide an indication by itself of the environmental impact that might result from the Pee Dee facility's SO_2 emissions. Rather, the mass-based emissions limit for SO_2 provides the best indication of such environmental impact, especially when evaluating impacts on concentration-based ambient standards such as the National Ambient Air Quality Standards along with Class I and Class II increment levels.

e. The Pee Dee project is a greenfield project where coal type compatibility is not as much of a concern as with the addition of new units at an existing generating station. With this in mind, was any consideration given to use of low-sulfur subbituminous coal as the primary fuel?

As part of the BACT determination process, Santee Cooper assessed the maximum degree of emissions reduction achievable through the application of production processes and available methods, systems and techniques, including clean fuels. The use of lower sulfur coal fits into this last category relating to the use of clean fuels. Balanced with this requirement, as noted earlier, is the consideration of energy, environmental, and economic impacts in the BACT process. It was in the evaluation of these factors that low-sulfur sub-bituminous coal was considered but determined to not be a viable option due to transportation constraints, risks and costs as well as supply limitations. Santee Cooper's consideration of these factors is briefly discussed below.

Low-sulfur sub-bituminous coal is primarily located in the western states. Reliance on the long-term supply of such sub-bituminous coals at the Pee Dee facility would thus impose a considerably higher railroad cost for the transport of this type of coal over much longer distances than eastern bituminous coals. Transportation cost would be further increased due to the

lower heat value of western coals, which would require the transport of as much as 30-40% more coal than eastern bituminous coals with equivalent heat content. Additional railcar sets would be necessary to transport these increased quantities of sub-bituminous coal and due to the longer delivery cycles necessary for the transport of the western sub-bituminous coals. Furthermore, the use of such coal also requires the purchase of additional rail equipment, which in turn results in increased emissions from locomotives as well as increased energy consumption.

Santee Cooper identified several other important factors indicating that the use of low-sulfur sub-bituminous coal would not be a viable option for the Pee Dee facility. One notable factor was the very high SO_2 removal efficiencies of WFGD control equipment available for eastern bituminous coals with higher sulfur content levels. These high removal rates supported the decision to spend capital dollars on control equipment rather than rely on lower sulfur, high slagging coals from western markets. In addition, western fuels are also prone to spontaneous combustion in coal silos and storage systems and thus these require inerting systems to prevent fires and explosions. Another major concern is the reliability of low-sulfur sub-bituminous coal supplies primarily located in the western states. The risk of major supply disruptions is greatly increased due to the long transport distances and the existence of bottlenecks that have developed on the rail systems due to the increased use of this fuel. The Energy Information Administration made specific note of these transport risks in its 2005 U.S. Coal Supply and Demand. Among other things, this report states: "the one transportation issue that most affected the coal industry in 2005 was the disruption of rail traffic from the Powder River Basin . . . consumers experienced major disruptions in coal shipments that then resulted in precariously low stock levels." The threat of such supply disruptions further underscores the impracticality of Santee Cooper relying on western sub-bituminous coals as the primary long-term fuel source for the Pee Dee facility.

The issue of the type of coal that will be burned at the Pee Dee project is further addressed in the response to Santee Cooper's response to item no. 3.f below.

f. At its existing generating stations, does Santee Cooper currently use any coal supplies with lower sulfur content than the design coal proposed for the Pee Dee project? If so, why were such coal supplies not considered for the Pee Dee project?

Yes, one Santee Cooper generating station has historically used an eastern bituminous coal with lower sulfur content than the design coal proposed for

the Pee Dee facility. However, veins of lower sulfur coal are being exhausted and, as a result, the generating station has begun in recent years to burn eastern bituminous coals with increasingly higher sulfur content levels. This trend is expected to continue in the foreseeable future not only for the units at this generating station, but for all of the other existing coal-fired units within the Santee Cooper system. For similar reasons, Santee Cooper has been forced to consider a wider range of higher sulfur coals for the Pee Dee facility, as indicated in the application by the sulfur content. Santee Cooper continues to be limited due to coal supply and transportation issues, as noted above. Mid to higher sulfur coals located in the central Appalachian mine areas are more available. There are some coal suppliers which have lower sulfur coal, but the cost for the low sulfur fuels has increased dramatically and availability decreases each year, and this trend is expected to continue. For these reasons, coals from the central Appalachian region would need to be the primary supply of coal over the life of the Pee Dee facility.

Given these issues, it is imperative that flexibility be retained in the construction permit with respect to the fuel burned by the Pee Dee facility. To that end, the ability to use and blend eastern bituminous coal with petcoke must be retained. The high removal efficiencies of the WFGD system will ensure the units are well controlled by limiting SO_2 emissions to 0.15 lb/MMBtu and setting a daily cap of 1,254 lb/hr, which would be applied to the units during normal operations, including those periods when petcoke is burned. DHEC, as the permitting authority, has not only the discretion, but the obligation, to consider the high removal efficiencies of WFGD control equipment available in today's market balanced with the additional costs, energy-reliability risks and environmental impacts associated with western coals. Furthermore, a consideration of these factors support a decision by DHEC to set a SO_2 BACT limit that can be met with the use of WFGD control equipment and locally available coal with higher sulfur content, rather than requiring the source to rely on lower sulfur, high slagging coals from western markets.

g. Was any consideration given to controlling SO_2 emissions using emerging multi-pollutant control technologies that can control both SO_2 and NO_x emissions with a high efficiency?

Santee Cooper considered all potentially available control technologies when developing its BACT analysis for the NSR regulated pollutants that the Pee Dee facility will emit in significant amounts. This technology review included consideration of Integrated Gasification Combined Cycle (as described below in our response to EPA comment no. 8) and emerging multi-pollutant control technologies that can control both SO_2 and NO_x emissions. Notable examples of emerging control technologies considered by Santee Cooper include

ammonia scrubbers and sodium bisulfite multi-pollutant control systems. Although considered, these control technology alternatives were not included in the BACT analysis since they either were determined not yet to be demonstrated and commercially available or, in the alternative, the alternatives would achieve "essentially equivalent" emissions control levels as the WFGD and SCR systems that were selected for the BACT analysis.[2] Santee Cooper, however, continues to examine the feasibility of using such emerging control technologies, such as ammonia scrubbers and sodium bisulfite multi-pollutant control systems.

4. Nitrogen Oxides (Main Boilers)

a. The proposed NO_x BACT limit of 0.07 lb/MMBtu (30-day average) is consistent with many other recent permit applications and permits. However, with a state-of-the-art low-NO_x combustion system and the latest SCR design in place, a lower BACT value would not be unreasonable. At a minimum, we would like further explanation as to why PC projects with lower emissions are not appropriate precedents - for example, the Louisville Gas & Electric Trimble County Unit 2 project with its equivalent 0.05 lb/MMBtu emissions limit. Related to this, a draft permit has recently been issued by EPA for the Desert Rock PC project in New Mexico with a NO_x limit of 0.06 lb/MMBtu on a 24-hour average basis. (We recognize that Desert Rock is a low-sulfur subbituminous coal project, however.)

EPA is correct to note that the permit for the Louisville Gas & Electric's Trimble County Unit 2 (Trimble County) contains a daily tonnage limit that can be equivalent to a NO_x rate of 0.05 lb/MMBtu. However, such equivalency is attained only when the Trimble County unit is operating at maximum capacity output levels. This means that the daily tonnage limit for Trimble County translates into an emissions rate that will be higher than 0.05 lbs/MMBtu at all other times, when the unit is not operating at maximum output levels due to low electricity demand or self-imposed run time restrictions. In addition, the mechanical conversion of the Trimble County daily tonnage limit into what EPA suggests is an "equivalent" 0.05 lbs/MMBtu rate limit would dramatically increase the stringency of the NO_x control requirement. For these reasons, the Trimble County limitation is not a useful benchmark for setting a BACT performance standard for NO_x that can be achievable for the Pee Dee facility under full range of load levels and operating conditions.

Santee Cooper prepared its NO_x BACT analysis based on an extensive review

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2 See NSR Manual at B.20-21; *Prairie State Generating Company* at page 46 (not requiring consideration of control technology alternatives that achieve equivalent or similar control levels).

of other new coal-fired power plants that are currently under development. This review, as presented in Table 5-2 in Volume I of the Pee Dee permit application, supports the selection of 0.07 lb/MMBtu rate, averaged over a 30-day period. Santee Cooper's selection of a 0.07 lb/MMBtu rate is further bolstered by its operational experience with SCR systems at other coal-fired units within the Santee Cooper system. Specifically, Santee Cooper has had several years of operational experience with SCR systems that were retrofitted on 6 existing coal-fired units at the Winyah and Cross generating stations. The 30-day NO_x emissions rates applicable to these units range from 0.140 to 0.100 lb/MMBtu. Setting NO_x rates at these higher levels has proved to be an aggressive control level due to the operational problems that have limited the effectiveness of the SCR systems over the last few years. One such limitation is the cycling of the load levels for the units, which has necessitated the shutdown of the SCRs when load levels (and thus flue gas temperatures) fall below manufacturer's specifications.[3] Another problem that has reduced SCR effectiveness has been the popcorn ash plugging of the SCR catalyst. Based on these real-world experiences with SCR operation, Santee Cooper believes that the proposed 0.07 lb/MMBtu limit is the most stringent BACT control level that is technologically achievable under the full range of foreseeable operating conditions. To put in other words, the proposed limit is an aggressive NO_x control level that also balances the need to handle the potential reduced load and popcorn ash issues that could likely arise at the Pee Dee units.

Finally, Santee Cooper believes that the proposed NO_x limit is consistent with the recent PSD permit limits that have been set for similar coal-fired generating units using similar fuel and control technologies. One notable example is the 0.07 lb/MMBtu NO_x limit that the Prairie State Generating Station in Illinois received in April 2005 and was just upheld on appeal to the U.S. EPA Environmental Appeals Board.[4] This is just one of many examples of coal-fired generating facilities that received PSD permits with 30-day NO_x rates at or above 0.07 lbs/MMBtu, as noted at Table 5-2 in Volume I of the application. Santee Cooper also agrees with EPA's observation that the proposed NO_x limit of 0.06 lb/MMBtu for Desert Rock is not a useful BACT benchmark for the Pee Dee facility. As EPA correctly noted, a more stringent NO_x rate was proposed due the planned use of sub-bituminous coals at the Desert Rock facility. Sub-bituminous coals, and boilers designed to burn them, have various characteristics that allow for somewhat lower NO_x uncontrolled emissions than bituminous coals and thus lower controlled

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[3] A more detailed discussion of this limitation is provided below in our response to EPA comment 4.c.

[4] *See In re: Prarie State Generating Company,* PSD Appeal No. 05-05 to the U.S. EPA Environmental Appeals Board (August 24, 2006) (Order Denying Review).

emissions with the same SCR control efficiencies. A primary reason for this is the different characteristics of the coals. Sub-bituminous coals have higher moisture contents than bituminous coals and, therefore, boilers designed for sub-bituminous coals have larger furnace areas. The increased furnace areas results in lower flame temperatures and subsequent lower diatomic nitrogen dissociation. Emission limits that are associated with sub-bituminous coals and the specific boilers designed for these coals are not technically feasible for the Pee Dee project given that the Pee Dee project will be using bituminous eastern coal as explained fully in the answer to question 3.f. above. Thus, the limit in the Desert Rock permit was eliminated from further consideration.

b. Santee Cooper has proposed a daily (24-hour) emissions cap for both boilers of 684 lb/hr based on an emissions rate of 0.06 lb/MMBtu per boiler. If this cap can be met on a 24-hour basis, why should BACT be 0.07 lb/MMBtu on a 30-day basis?

Just as in the case of SO_2, Santee Cooper has proposed two separate NO_x emissions limits for the Pee Dee facility. The 30-day NO_x rate of 0.071b/MMBtu is a technology-based performance standard that is intended to reflect BACT for controlling NO_x emissions from the Pee Dee units. The daily NO_x emissions cap is an environmental limit that is intended to ensure the protection of air quality and other environmental values. As explained above, the technology-based BACT limit is fundamentally and functionally different from the environmental limit on total mass emissions.

EPA is correct to note that the stringency of the proposed 30-day BACT limit does not directly correlate to the stringency of the proposed daily mass limit when it is converted to the lb/MMBtu rate at maximum output levels. This was by design and is due to the fundamental differences between the two NO_x limits. To the extent that the daily mass limit is a more restrictive standard, Santee Cooper need not rely only on the removal efficiencies of the SCR control technology to achieve compliance with this mass-based environmental limit. Rather, compliance with the daily emissions cap could be achieved, in part, through self-imposed operating restrictions on the dispatch, operation, and perhaps fuel use at the Pee Dee units. This flexibility is essential for Santee Cooper to comply with the daily mass-based NO_x limit proposed for the Pee Dee facility. This flexibility, however, would be lost by a mechanical conversion of the daily emissions cap into an emissions rate of 0.06 lb/MMBtu for each Pee Dee unit when operating at full capacity – as suggested by the EPA comment above. To put in other words, the proposed NO_x BACT limit of 0.07 lb/MMBtu establishes a performance standard for the selected NO_x control technology (low-NO_x burners and SCR) that will be installed on each Pee Dee unit. Santee Cooper must comply

with that 30-day BACT limit only through proper operation of the selected NO_x control technologies. If DHEC were to mechanically convert the daily emissions cap into a 0.06 lb/MMBtu rate for each unit, this more stringent NO_x rate would not be achievable under all foreseeable operating conditions through proper operation of the selected NO_x control technologies. Most importantly, Santee Cooper will not be able to rely on other alternative compliance options, such as the self-imposed operating restrictions noted above.

c. Will Santee Cooper ask potential vendors to make offers on alternative NO_x emissions levels or is Santee Cooper simply planning to specify a level that potential vendors must meet?

Santee Cooper has performed a detailed review of recent BACT determinations for coal fired units and used this review as a basis for selecting the limits. See Table 5-2 in Volume I of the Pee Dee permit application. Further discussion on this review is provided in our response to EPA comment 4.a above.

Santee Cooper has had some discussions with SCR vendors on the expected NO_x performance levels at the Pee Dee units. However, NO_x emissions levels actually achieved over the long-term depends on unit-specific factors that vendors cannot address. One key factor for long-term performance of the SCR systems is the load levels of the coal-fired unit. As noted above, Santee Cooper's experience operating SCRs began in 2003 when the Cross Units 1 and 2 SCRs came online. Following them in 2004 were the Winyah Units 1 and 2, and in 2005, the Winyah Units 3 & 4. Because of Santee Cooper's load profile, all units are turned down each evening when load diminishes, then ramped up each morning when load increases. SCR catalyst will not function below exit gas temperatures of 615 F. This does not occur unless the units are operating above 55-75% load. The SCR is "on" at or above this load, and the outlet emissions may be lower than 0.07lb/MMBtu. At night load diminishes and drops below the load required to maintain the SCR reaction temperature, NOx emissions will be uncontrolled. Since all emissions will be averaged over a compliance period, Santee Cooper believes that the proposed BACT level of 0.07 lb/MMBtu represents the maximum removal achievable over a 30-day period based on current technology.

Additionally, SCR removal rates are not linear below 0.07 lb/MMbtu, and 'ammonia slip' through the SCR reactor occurs. The increase results in ammonia bypass thru the SCR. Both these issues cause ammonia to combine with gas stream SO_2 to form ammonium bisulfate, a sticky substance that coats air heater surfaces, ductwork and baghouse or precipitator surfaces and causes operational problems including reductions in particulate control

efficiencies. From a practical standpoint, the 0.07lb/MMBtu level gives Santee Cooper flexibility to operate under system load conditions and maintain higher unit and collection equipment availability.

d. What NO_x emissions rates are being achieved at other Santee Cooper coal-fired units equipped with SCR?

As required under a NSR consent decree,[5] Santee Cooper is required to meet limits on its coal fired units ranging from 0.100 to 0.140 lb/MMBTU of NO_x. Santee Cooper has noted above the difficulties in maintaining these limits when the units are "turned down" due to the nature of the chemical reactions involving the SCR unit, ammonia slip, and popcorn ash. See our responses to EPA comments 4.a and 4.c above. In addition, it is important to note that Santee Cooper's compliance with the applicable rates depends on the exclusion of NO_x emissions during those periods when the SCR has been unable to operate during malfunction events, as defined under the consent decree. Malfunction data exemptions allowed under the consent decree have included boiler tube leaks and ammonia pump trips, among others.

e. Was any consideration given to controlling NO_x emissions using emerging multi-pollutant control technologies that can control both SO_2 and NO_x emissions with a high efficiency?

Santee Cooper considered all potentially available control technologies when developing its BACT analysis for the NSR regulated pollutants that the Pee Dee facility will emit in significant amounts. Please see our response to EPA comment no. 3.g for a discussion of the alternative and emerging multi-pollutant control technologies that Santee Cooper has considered for BACT and continues to consider in evaluating feasible control technology alternatives.

5. Sulfuric Acid Mist (Main Boilers)

a. Is consideration being given to selection of an SCR catalyst that will minimize formation of SO_3?

Santee Cooper is considering SCR catalyst selection that will minimize formation of SO_3.

b. On page 5-19 of the permit application, Santee Cooper states an assumption that

[5] ***See U.S. vs. South Carolina Public Service Authority*, Civil Action No. 2 04 0822 18, U.S. District Court for the District of South Carolina (Charleston Division).**

H_2SO_4 will be controlled by the WFGD at the same 97.5 percent control efficiency as expected for SO_2. This does not seem at all realistic based on our understanding.

Santee Cooper anticipates the WFGD to control H_2SO_4 emissions, but Santee Cooper does not expect the WFGD to control H_2SO_4 emissions to the level that the WFGD will control SO_2. The application does not claim that WFGD would remove 97.5% of H_2SO_4, and any implication of 97.5% control was inadvertent. Rather, Page 5-19 used the 97.5% value in concert with AP-42 SO_3 oxidation rates to calculate a comparative emission rate that is far below any currently permitted H_2SO_4 emission rate from a comparable unit. Quoting from the permit application on Page 5-19:

> **For combustion alone, AP-42 predicts that 0.7% molar fraction of fuel sulfur will become H_2SO_4, equivalent to 1.07% by weight. While the SCR will increase H_2SO_4 generation, the WFGD system will also remove H_2SO_4, and it is unclear whether or not any net increase of H2SO4 will result from the SCR/WFGD combination. Based on the design fuel sulfur of 3.75% and assuming the same H2SO4 control as SO2 control (97.5%), using AP-42 the H2SO4 emissions would be 9.2 lb/hr or 0.0016 lb/MMBtu.**
>
> **However, it is unknown precisely how much fuel sulfur will oxidize across the SCR. Other recent permits assume higher conversion rates. For example, LG&E Trimble essentially doubles the AP-42 estimated conversion rate, and has an emission limit of 26.6 lb/hr on a 3-hr average (equivalent to 0.00383 lb/MMBtu at100% load).[6] The Peabody sites (Thoroughbred and Prairie State) have limits at 0.00497 lb/MMBtu and 0.005 lb/MMBtu, and Longview's limit is 0.0075 lb/MMBtu. Each of these units also includes add-on control for H_2SO_4, with wet ESPs for LG&E, Thoroughbred and Prairie State and dry sorbent injection for Longview. However, the percent removal of H_2SO_4 by the add-on controls is not quantified, and in some cases (e.g., LG&E) does not provide any additional control as documented in the emissions calculations and BACT analysis.[7]**
>
> **H_2SO_4 generation from SCR catalysts is an evolving area, and while some facilities are proposing add-on control technology specifically for H_2SO_4, BACT in the end is an emission limit, and not a specific control technology.**

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[6] (26.6 lb/hr)/(6,942 MMBtu/hr)=0.00383 lb/MMBtu.

[7] LG&E permit application, page I-27, "... estimated sulfuric acid production rate is 2.0 percent of SO_2 in the combustion process and across the SCR catalyst." Page I-28, "While the potential for reductions in [H_2SO_4] is not directly quantified, the ability of the wet ESP to act as a potential polishing device provides additional certainty that the low [H_2SO_4] emission rates can be met."

Based on the available information, Santee Cooper proposes BACT for H_2SO_4 as 42.75 lb/hr based on a 3-hr rolling average consistent with three 1-hour performance tests. The proposed BACT limit is derived from an estimated 0.0075 lb/MMBtu H2SO4 emission rate, but is proposed in a lb/hr format consistent with the format of the LG&E standard for H_2SO_4.

c. H_2SO_4 control options that should be assessed during SCDHEC's BACT determination include ammonia injection to react with SO_3 prior to the PM control device, alkaline injection to react with SO_3 prior to the PM control device to react, and WESP after the WFGD.

Santee Cooper has identified a BACT limit derived from a 0.0075 lb/MMBtu H_2SO_4 emissions rate. The proposed BACT limit is based on a consideration of technologies employed at a number of other newly permitted plants. The BACT limit is an emissions limitation and does not require the installation of any specific control device. Thus, Santee Cooper has not yet specified a particular control option for H_2SO_4, but it is considering a number of technologies. Santee Cooper will first consider alkaline injection (MgO) if this is needed to control SO_3 emissions. Santee Cooper also plans to leave space between the WFGD outlet and the stack to allow installation of a WESP, if needed for SO_3 control.

d. Has Santee Cooper seen any indication of increased H_2SO_4 emissions at its other units equipped with SCR?

Santee Cooper has noted "blue plume" opacity issues at its Cross Generating Station. Santee Cooper has elected to use a fuel additive to help control the blue plume to the extent that such measures are necessary. The visual effect of a blue plume is assumed to be associated with increased SO_3 or H_2SO_4 emissions.

6. Mercury (Main Boilers)

a. Santee Cooper has proposed a co-benefit approach for control of mercury emissions. That is, mercury emissions will be reduced as a co-benefit of controls installed for other pollutants. We recommend that consideration also be given to use of a specific add-on mercury control method. If SCDHEC decides to issue a permit for this project without specific mercury controls, we further recommend that the permit specify a project layout that will accommodate future installation of a specific add-on mercury control method.

Santee Cooper is currently designing a plant layout that will accommodate this request.

b. The listed mercury emission rate on page 5 of Appendix C of the permit application is 0.0215 lb/hr for each unit. By comparison, the mercury NSPS in 40 CFR 60.45Da is 0.000021 lb/MWh (12-month average) for bituminous coal combustion, which equates to 0.014 lb/hr for a 660-MW unit. We request an explanation of this difference.

The mercury emission rate listed in Appendix C is based on the use of AP-42 emission factors for mercury in coal. Santee Cooper concurs the Pee Dee units would be subject to NSPS subpart Da and plans to design the units to meet these limits.

c. Are any of the water basins in the project site area currently experiencing mercury concentrations considered excessive (for example, fish consumption warnings are in effect)? If so, how does SCDHEC plan to address the additional mercury deposition that could result from the Pee Dee project?

The Great Pee Dee River is one of the more than 50 water bodies of South Carolina with fish consumption advisories due to mercury. The following Table provides the present advisories.

South Carolina Fish Consumption Advisories for the Pee Dee River

WATERBODY	LOCATION	SPECIES OF FISH	ADVISORY
Great Pee Dee River	Entire river in SC	Black Crappie Blue Catfish Bluegill Channel Catfish Redear Sunfish Warmouth	No restrictions No restrictions No restrictions No restrictions No restrictions No restrictions
Great Pee Dee River	From NC/SC Border to I-95 in Dillon County, SC From I-95 to Winyah Bay	Bowfin (Mudfish) Largemouth Bass Bowfin (Mudfish) Largemouth Bass	1 meal a week 1 meal a week 1 meal a month 1 meal a month

SOURCE: SCDHEC

The Pee Dee Site is located below I-95.

SC DHEC is addressing both point and non-point mercury sources under the Clean Water Act, as amended, and will be developing a TMDL for the Great Pee Dee River due to its listing under Section 303(d).

The U.S. EPA has proposed a cap and trade program for mercury (CAMR) as opposed to specific limits on mercury emission sources. Based on EPA material published in support of CAMR, EPA clearly believes mercury is a regional problem in their support of the trading plan, and the files that support their contention are in the docket for the rule. The Pee Dee units will also be subject to CAMR in addition to the mercury limits listed in Subpart Da of the New Source Performance Standards. Other mercury issues in the project area will be identified and addressed in the Environmental Assessment that will be submitted at a later date.

7. Auxiliary Boiler

At the time of the application, Santee Cooper was considering the construction of an auxiliary boiler. Santee Cooper has since chosen not to pursue construction of an auxiliary boiler. As such, responses to these comments are now not needed.

a. The proposed BACT for SO_2 emissions is use of fuel oil with a sulfur content of 0.05 percent, equivalent to 500 ppm sulfur by weight. If the project is approved, a fuel oil sulfur content of 15 ppm will be the norm by the time operation begins.

b. When will it be known "if the nearby [natural gas] pipeline has adequate capacity" as discussed on page 5-21 of the permit application?

c. Santee Cooper states on page 5-21 of the permit application that the auxiliary boiler will be used "to provide steam during startup of the main boilers or when both main boilers are offline." Would Santee Cooper be willing to accept a permit condition restricting operation of the auxiliary boiler to these uses?

d. Santee Cooper proposes an operating limit of 1,000 hours per year for the auxiliary boiler. Is it likely that main boiler startup times and times when the main boilers are offline could be as much as 1,000 hours per year (approximately 11 percent of the year)?

8. Integrated Gasification Combine Cycle

a. On page 5-7 of the permit application, Santee Cooper comments on IGCC technology with reference to the letter from Stephen Page of EPA dated December 13, 2005. SCDHEC should consider the following two points concerning the EPA letter: (1) Mr. Page does not say in the letter that a state reviewing authority is prohibited from considering IGCC in a BACT evaluation for a PSD permit. (2) Although Mr. Page states an opinion that EPA would not

require consideration of IGCC as a BACT option, he points out that consideration of IGCC might be appropriate with respect to section 165(a)(2) of the Clean Air Act specifying that opportunity be afforded for public comment on "alternatives" to a proposed project.

Santee Cooper does not disagree with EPA's general point that DHEC may retain discretion to consider IGCC either as part of the BACT analysis or the "alternatives" analysis authorized under section 165(a)(2) of the Clean Air Act. However, DHEC's discretion is not unlimited and the permit application submitted by Santee Cooper has identified multiple reasons for eliminating IGCC as an alternative technology for the Pee Dee facility. A brief discussion of these technical and legal reasons is presented below for DHEC's consideration.

The first step of the BACT process requires the permitting authority to identify all available control options that may have "a practical potential application" to the proposed new source. Although broad in scope, the obligation to review potentially available control technologies is not without limits. As set forth in the EPA New Source Review Workshop Manual [8] and affirmed in recent policy guidance, [9] DHEC is not required to consider in the BACT analysis those alternative technologies that would fundamentally change the scope of the project or redefine its basic design. Volume I of the Pee Dee permit application at pages 5-6 thru 5-7 provides a detailed description of the fundamental differences between the IGCC technology and the supercritical pulverized coal combustion technology that is being proposed for the Pee Dee units. We believe that this technical information supports a decision by DHEC to eliminate IGCC technology as potentially available control technology under the first step of the BACT analysis. The legal basis for such a determination is that the application of IGCC technology would redefine the basic design of the Pee Dee facility. Notably, the very same conclusion has been expressly affirmed by EPA in its recent IGCC policy guidance as well as in recent permitting decisions affirmed on

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[8] *See* EPA New Source Review Workshop Manual, at Chapter B.

[9] *See* EPA Letter from Stephen D. Page, Director of EPA Air Quality, Planning and Standards, to Paul Plath of E3 Consulting, LLC (December 13, 2005). Santee Cooper notes that EPA recently announced a proposed settlement with environmental groups that had filed a legal action in court challenging the new IGCC policy for setting BACT / LAER standards under the NSR program. The proposed settlement does not repudiate, withdraw or limit the general principles and positions articulated in the current IGCC policy statement. Rather, the proposed settlement only clarifies that the IGCC policy, as articulated in the EPA letter from Stephen G. Page on December 13, 2005, "is not a final agency action and creates no rights, duties, obligations, nor any other legally binding effects on EPA, the states, tribes, any regulated entity, or any person." We believe that the principles and positions articulated in the EPA policy statement thus continue to remain in effect and DHEC may exercise its discretion to follow that EPA policy in reviewing the PSD permit application for the proposed Pee Dee facility.

appeal.[10]

The second step of the BACT process allows DHEC to eliminate from the BACT analysis those potential control options that are not technically feasible. A control technology is not technically feasible if DHEC determines that the technology is neither "demonstrated" for a similar source nor both "available" and "applicable" as a control technology for that source category.[11] Santee Cooper believes ample technical information is already in the permitting record to support a DHEC finding that IGCC is still a developing technology that is neither demonstrated nor commercially available or applicable for use as a baseload electric generating unit. See Volume I of Pee Dee Permit Application at page 5-6. One important additional factor in support this conclusion is the relatively low reliability of the IGCC technology for serving as baseload electric utility unit. Separately, the technologies of gasification and combined cycle power blocks are proven and reliable. Combined into an IGCC power plant, however, the reliability is far less than what could be achieved for a pulverized coal combustion power plant. Reliability for IGCC can range from 60% to 86%, based on recent data for IGCC plant availability. These levels are well below typical availabilities of new combustion electric utility units, which generally have availabilities above 95%. Although not an IGCC plant, the Eastman Kodak facility in Tennessee has been cited as a successful implementation of gasification technology due to reliability levels of around 98% in recent years. However, the Kodak facility has a spare gasifier and the estimated reliability would drop likely below 90% if it were not to operate with the spare gasifier. It should also be noted that Eastman Kodak has achieved high levels of reliability in part due to having over 20 years of operating experience with gasification technology. In contrast, the power sector has very limited practical experience in the extended operation of the various IGCC technologies.

In the fourth step of the BACT analysis, DHEC may affirm or reject available control technologies based on energy, environmental and economic impacts of that technology. One relevant factor strongly weighing against IGCC – to the extent that it were ever determined to be the top alternative technology available – is the relatively high costs of building an IGCC generating facility. As indicated at page 5-6 of Volume I of the permit application, the capital costs of an IGCC unit are generally about 25%

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[10] *See e.g.*, EPA Letter from Stephen D. Page; Thoroughbred Generating, Kentucky Environmental and Public Protection Cabinet, File No. DAQ-26003-037 and DAQ-26048-037; Wisconsin Electric Power Co. – Elm Road Generating Station, Wisc. Div. Hearing App. Case No. 1H-04-03.

[11] *See* EPA New Source Review Workshop Manual, at page B.7; *In re: Prairie State Generating Company*, PSD Appeal No. 05-05, at page 17.

higher than a comparable new pulverized coal generating unit. These disproportionately higher costs for deploying IGCC technology provide further grounds for DHEC to reject IGCC as a viable alternative technology under forth step of the BACT analysis.

Finally, the EPA comments suggest it may be appropriate for DHEC to consider "alternatives" to the proposed Pee Dee facility pursuant to section 165(a)(2) of the Clean Air Act. This provision prohibits the issuance of a PSD permit until "a public hearing has been held with opportunity for interested persons . . . to appear and submit written or oral presentations on the air quality impacts of such source, alternatives thereto, control technology requirements, and other appropriate considerations." DHEC's obligations under section 165(a)(2) of the Act are well defined and limited in scope. As noted by the Environmental Appeals Board in the recent Prairie State Generating decision,[12] the permitting authority need not respond to comments on alternatives raised during public comment period that are "unrelated to air quality." It is sufficient for DHEC to explain that such comments "fall outside the scope" of what the public is entitled to raise during the public comment period.[13] Furthermore, DHEC is not required to "conduct an independent analysis of available alternatives" as part of the PSD permitting process. The extent of DHEC's consideration and analysis "need be no broader than the analysis" presented by the interested party during the public comment period.[14] These guidelines clearly indicate that DHEC has no independent, affirmative obligation to assess the public need for the Pee Dee facility and that the consideration of "alternatives" under section 165(a)(2) of the Act could only arise if that issue is raised in public comments. To the extent that this issue is raised in the public comments, Santee Cooper will work with DHEC to provide further documentation in the permitting record regarding the many reasons why the Pee Dee power plant is necessary to address a growing baseload energy deficit projected for the Santee Cooper system.

Finally, it should be noted Santee Cooper's response to EPA comment no. 10.f also addresses the Santee Cooper's projected future need for baseload power and explains that energy-efficiency conservation efforts alone are not sufficient to offset these growing energy demands in South Carolina.

b. On page 5-6 of the permit application, Santee Cooper states that "IGCC is still a developing technology and not commercially available." We disagree that the

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[12] ***In re: Prairie State Generating Company,*** **PSD Appeal No. 05-05, at pages 38-40.**

[13] ***In re: Prairie State Generating Company,*** **PSD Appeal No. 05-05, at page 39.**

[14] ***In re: Prairie State Generating Company,*** **PSD Appeal No. 05-05, at page 39.**

technology is not commercially available. Well-known companies such as General Electric and ConocoPhillips offer the technology. Furthermore, while it is true that government funding has been part of previous IGCC projects, some recently proposed IGCC projects - including the Cash Creek project in Kentucky - do not involve government funding. In addition, some large utilities such as American Electric Power and Duke/Cinergy have announced that they plan to pursue IGCC technology, presumably without government funding.

As discussed above, Santee Cooper contends that IGCC has not been commercially demonstrated at the capacity and availability levels that would be needed for a new baseload power plant. Santee Cooper, however, recognizes that advances are being made to demonstrate IGCC technology and, in light of this fact, commits to provide, to the extent appropriate, additional information confirming that IGCC still has not sufficiently evolved to be considered a demonstrated and commercially available technology.

EPA is correct to note that AEP and Duke/Cinergy have publicly announced plans to build new IGCC plants. However, their commitment to build such facilities is contingent on securing the necessary funding through a combination of PUC rate recovery and federal incentives that were recently passed by Congress under the Energy Policy Act of 2005. Both companies have acknowledged securing the necessary funding is an essential prerequisite for moving forward with their IGCC projects.

9. Startup, Shutdown, Malfunction

a. Startup and shutdown periods are part of normal operation and therefore are subject to BACT. If BACT limits for routine operation of the main boilers do not apply during startup and shutdown, will SCDHEC give consideration to numeric emissions limits specific to periods of startup and shutdown or will startup and shutdown BACT be established as work practice requirements?

Santee Cooper has determined that it is technically infeasible to set numeric BACT limits during startup, shutdown, and malfunction ("SSM") events. SSM events are narrowly defined and thus will be limited to specific, short-term periods and circumstances when technical limits preclude the setting of reasonable numeric BACT limits. Therefore, Santee Cooper will work with SCDHEC to develop work practice requirements for periods of SSM, in lieu of setting numeric BACT limits. The work practice requirements will, among other things, specify operational procedures and standards for minimizing emissions during the limited SSM events. In addition, Santee Cooper will work with SCDHEC to provide the necessary assurances that short-term ambient standards are protected and demonstrate that the Pee Dee facility

remains in compliance with NAAQS and PSD increment requirements.

b. On page 5-11 of the permit application, Santee Cooper proposes that emissions limits not apply during malfunctions. SCDHEC needs to review its SIP regulations to assess whether emissions limits can be waived during a malfunction event. EPA's usual policy is that emissions limits apply during malfunctions but that enforcement discretion can be used if malfunction emissions exceed limits.

As stated above, Santee Cooper has determined that it is technically infeasible to set numeric BACT limits during SSM events. Therefore, Santee Cooper will work with SCDHEC to implement the BACT requirements through work practice and operational standards for minimizing emissions during SSM events, including periods of malfunctions.

10. Other Comments

a. Cooling Towers - (1) On page 5-25 of the permit application regarding cooling towers, Santee Cooper says that a formal BACT analysis is not needed "for this trivial source." On page 3-4, however, the estimated PM emissions rate for the cooling towers is listed as 41 tpy. While we would agree that a formal BACT analysis is not required in light of the efficient drift elimination system proposed by Santee Cooper, an emissions rate of 41 tpy is well above the PSD PM and PM_{10} significant emissions rates and is not trivial. (2) For at least one recent proposed coal-fired power plant project in Region 4, an outside party asked that consideration be given to a dry cooling system. We recommend that Santee Cooper be prepared to discuss the feasibility of dry cooling for the Pee Dee project.

Santee Cooper agrees with EPA that no formal BACT analysis is required in light of the proposed drift elimination system. Santee Cooper's use of the word "trivial" was to indicate that emissions from the wet cooling towers will be sufficiently minimized and relatively low as compared to the emissions from the two main coal-fired boilers at the proposed Pee Dee facility. Regarding the use of dry cooling systems, these systems optimally work in low-humidity environments. Florence County would not be considered a low-humidity environment. In addition, the energy penalty associated with dry cooling systems further justifies the selection of wet cooling towers. Notably, the additional power required for dry cooling systems would act to increase emissions of air pollutants other than PM. Furthermore, a net increase in PM emissions could also occur if the dry cooling system would lower the Pee Dee units' efficiency below a few percent. Santee Cooper believes that these environmental and energy impacts further justify the selection of wet cooling towers, in lieu of dry cooling systems, for the Pee Dee

facility.[15]

b. Other Coal-fired Power Plant Projects - (1) Two other proposed coal-fired power plant projects are potentially relevant to the Pee Dee project. Duke Power has proposed the addition of two new supercritical pulverized coal units at its existing Cliffside generating station in North Carolina west of Charlotte. Seminole Electric Cooperative has proposed a new supercritical pulverized coal unit at its existing Palatka generating station in Florida south of Jacksonville. Both projects have characteristics (fuel type, boiler type, etc.) similar to the Pee Dee project. We recommend that SCDHEC review this project. (2) The Sierra Club has been vocal on practically every coal-fired power plant project in Region 4. SCDHEC may wish to review especially some of the comments made by the Sierra Club on the following projects in Kentucky: Thoroughbred Generating Station, Louisville Gas & Electric Trimble County Unit 3, East Kentucky Power Cooperative Spurlock Unit 4. (3) SCDHEC may also wish to review the draft permits and supporting information issued recently by EPA Region 8 for the Deseret circulating fluidized bed project in Utah and the Desert Rock PC project in New Mexico.

Santee Cooper will take this under consideration and provide, to the extent appropriate, an analysis of the PSD permitting implications of these coal-fired power plant projects in a supplemental response.

c. Public Information - Based on the public scrutiny often applied to coal-fired power plant projects, especially greenfield projects, we recommend that Santee Cooper and/or SCDHEC consider conducting a public information campaign well before any permitting decisions have been made. This is strictly a suggestion.

Santee Cooper has held information sessions with citizens living in Florence County. Santee Cooper has also provided information to environmental groups that have shown interest in new coal generation, such as the Southern Environmental Law Center (SELC), the Pee Dee River Coalition, SC DNR, Florence County community groups, and Florence County educators.. Santee Cooper plans to continue meeting with the public on issues regarding this proposed generation facility.

d. Virgin Fuel - Santee Cooper states on page 4-17 of the permit application that an assessment of compliance with SCDHEC's toxic air pollutants rule is not needed because "the proposed emission sources associated with this project only burn virgin fuel." We have two questions about this statement. First, does SCDHEC agree that petcoke is virgin fuel? Second, does SCDHEC have any toxic air

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[15] **Although wet cooling towers will increase use of water, any potential impacts resulting from such increases will be addressed during the NPDES permitting process under the Clean Water Act.**

pollutant concerns about non-combustion emissions units and activities?

The petcoke Santee Cooper plans to use as fuel is unused and commercially available. Based on SC DHEC's regulations, petcoke would therefore be defined as a virgin fuel.

e. Fluorides and Lead Compliance Averaging Periods - The proposed emissions limits for fluorides and lead are based on 30-day compliance averaging times. Without a CEMS, compliance with a 30-day averaging period limit is not practically enforceable unless emissions can be linked to some parameter that is measured frequently. What does Santee Cooper propose as the compliance evaluation method if fluorides and lead limits are established on a 30-day basis?

Santee Cooper is proposing to achieve the 30-day rolling average through the efficiency of control technologies for SO_2 and PM. Fluoride emissions will be controlled through the efficient operation of the scrubber, whereas lead emissions will be controlled through the efficient operation of control technologies for PM emissions. Accordingly, Santee Cooper is proposing to use SO_2 removal efficiency as a surrogate for fluoride and to use PM control efficiency as a surrogate for lead.

f. Energy Efficiency - Santee Cooper is a member of the group that just issued the *National Action Plan for Energy Efficiency* (July 2006). Does this have any bearing on the long-term need for the Pee Dee project?

No. Although the energy efficient efforts referenced in the plan will lower consumer demand for electricity, these reductions will not be sufficient to offset projected increases in demand for electricity in the Santee Cooper service area. For this reason this plan, has no bearing on the long-term need for the Pee Dee project. Santee Cooper still needs Pee Dee to meet our forecasted energy and demand requirements as shown by our Generation Resource Plan.

Even so, Santee Cooper promotes energy efficiency with its customers, and stresses that customers can do their part by putting energy conservation measures to use in their homes and businesses. Energy conservation is an important component to any generation plan. Conservation means less generation will be needed. Conservation means customers' power bills will be lowered and decreased demands are placed on our generating facilities.

Conservation is good for the environment. However, conservation alone cannot solely satisfy the state's growing energy demands of the state. It takes a combination of building and conserving. Through responsible building and conservation efforts, we are working to ensure the continued delivery of low-

cost and reliable power. By doing so, we help achieve our mission of improving the quality of life for the people of South Carolina.

Examples of how Santee Cooper is continuing to stress energy efficiency with its customers are exemplified by our Demand Side Management (DSM) Activities listed and described below.

1. Good Cents New and Improved Home Program
The Good Cents Program was developed to provide residential customers an incentive to build new homes to higher levels of energy efficiency and improve existing homes by upgrading heating and air conditioning equipment and the thermal envelope to high energy efficiency standards. All homes are evaluated to determine if they meet the standards set for the program. Inspections are completed during construction for new homes and at the completion of construction for new and improved homes.

2. H_2O Advantage Water Heating Program
H_2O Advantage is a storage water heating program designed to shift the demand related to water heating off-peak. This is accomplished with the installation of an electronic timer or radio controlled switch on an 80 gallon water heater. This program began in 1990 and was offered for the last time in 2000, with contracts spanning 10 years.

3. Commercial Good Cents
Commercial Good Cents is offered to commercial customers building new facilities that improve the efficiency in the building thermal envelope, heating and cooling equipment, and lighting. Commercial customers that meet program standards are given an up-front rebate to encourage participation in the program.

4. Thermal Storage Cooling Program
The Thermal Storage Cooling Program shifts energy used by commercial customers for air conditioning from peak to off-peak hours by utilizing thermal energy stored in a medium such as ice or water. Rebates are offered to customers who install this type of equipment.

Santee Cooper appreciates your time and effort in reviewing this application. If you have any questions or concerns, please contact Mr. Kevin Clark at either (843) 761-8000 ext. 5193 or kjclark@santeecooper.com.

Sincerely,

Julie Jordan Metts, P.E. for

Jay Hudson, P.E.
Manager
Environmental Management

JAH:JJM:KJC:dks

cc: Jim Little, U.S. Environmental Protection Agency, Region 4

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